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Arceuthobium tsugense subsp. *mertensianae*

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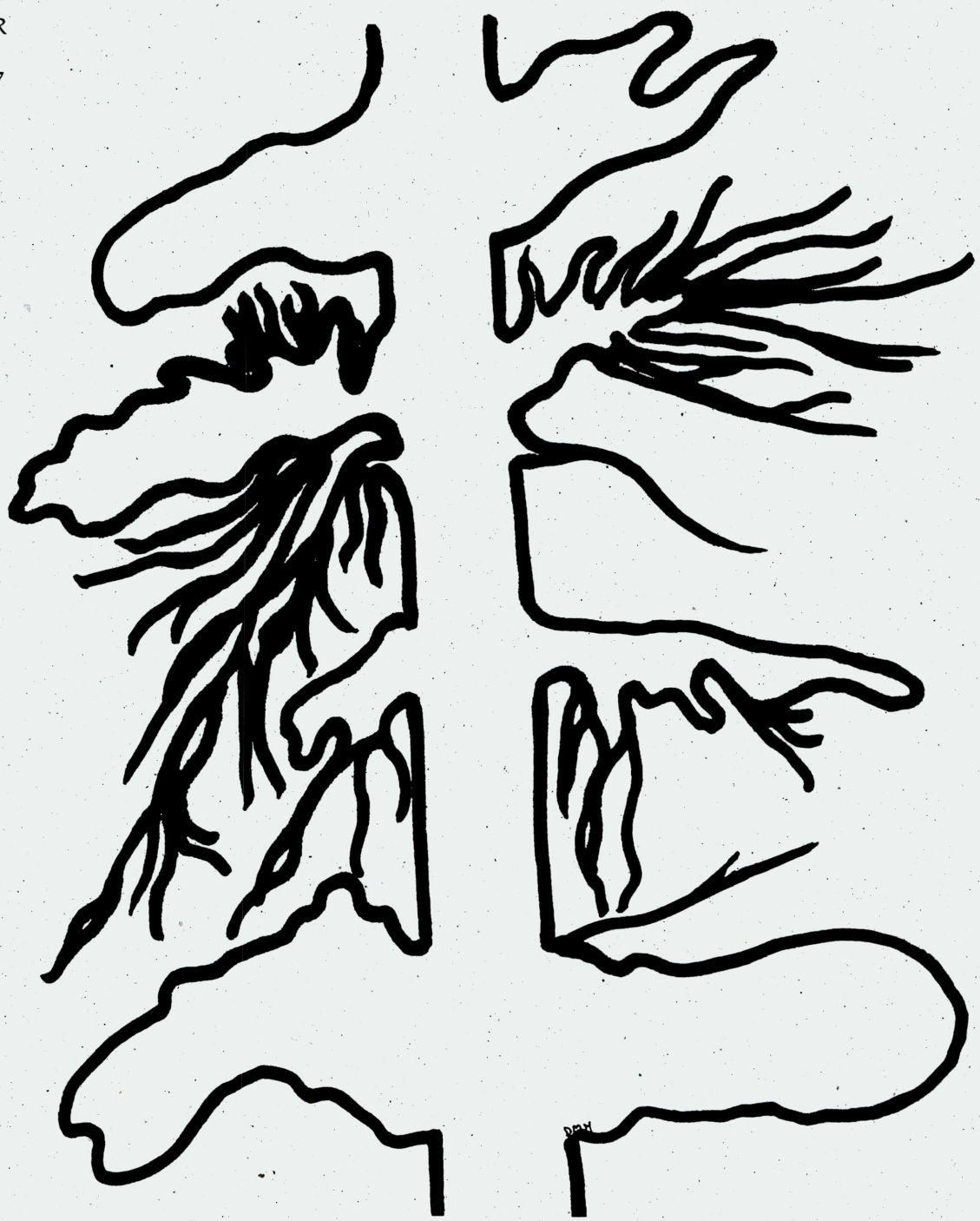

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Mountain Hemlock Dwarf Mistletoe (*Arceuthobium tsugense* subsp. *mertensianae*)

1995 General Regional Survey in Washington

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INTRODUCTION

The Northwest Forest Plan (The Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, by the Forest Service and Bureau of Land Management, April 1994) directs the Forest Service and Bureau of Land Management to conduct general regional surveys for mountain hemlock dwarf mistletoe in Washington. The objective of the "general regional survey" (Survey and Manage Component 4) is to survey for the species to acquire additional information and to determine necessary levels of habitat protection. The Forest Insects and Diseases Group, Natural Resources Unit, Pacific Northwest Region, USDA Forest Service, is conducting the general regional survey for mountain hemlock dwarf mistletoe.

SUMMARY OF 1995 SURVEY

The 1995 portion of the general regional survey covered the Gifford Pinchot, Mt. Baker-Snoqualmie, and Olympic National Forests in Washington. The survey consisted of two parts: 1) revisiting forest inventory plots, established 1974 to 1986, that reported dwarf mistletoe on mountain hemlock, and 2) conducting roadside surveys in the mountain hemlock zone, in areas suggested by local professionals, or in the vicinity of timber inventory plots that reported dwarf mistletoe on mountain hemlock. Roadside surveys are an efficient method of sampling dwarf mistletoe incidence and severity in large forested areas (Johnson et al., 1981; Johnson et al., 1984; Merrill et al., 1984; Mathiasen et al., 1996).

On the Gifford Pinchot National Forest, we found one population of mountain hemlock dwarf mistletoe on the east side of Mt. St. Helens National Volcanic Monument. On the Mt. Baker-Snoqualmie National Forest, mountain hemlock dwarf mistletoe occurred in six different areas. On the Olympic National Forest, we found mountain hemlock dwarf mistletoe only near Three Peaks.

Specimens of mountain hemlock dwarf mistletoe were collected from populations representing large extensions of the range of this dwarf mistletoe in Washington. All specimens collected were deposited at the USDA Forest Service Forest Pathology Herbarium at the Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.

We found that the dwarf mistletoe information from the 1974-86 timber inventory plots was not reliable, and that occurrence of mountain hemlock dwarf mistletoe is scattered and unpredictable in Washington. The survey will continue in 1997.

SURVEY RESULTS BY NATIONAL FOREST

Gifford Pinchot National Forest (Surveyed July 1995)

Mt. Adams Ranger District

Timber Inventory Plots

Plot 454 - south of Mt. Adams Wilderness (T.7N, R.11E, S.6): Lodgepole pine dwarf mistletoe (Arceuthobium americanum) infected lodgepole pine and subalpine fir. Mountain hemlock was present but not infected with mountain hemlock dwarf mistletoe.

Plot 565 - east of Indian Heaven Wilderness (T.6N, R.9E, S.19): Mountain hemlock and Pacific silver fir were infected with larch dwarf mistletoe (Arceuthobium laricis). This is the first location where larch dwarf mistletoe has been found infecting mountain hemlock in the Cascades and the first report of a natural infection of this dwarf mistletoe on Pacific silver fir.

Roadside Surveys

Forest roads 24, 60, 6020, and 6030 on the east side of Indian Heaven Wilderness were surveyed. Although several populations of mountain hemlock were present along these roads, no mountain hemlock dwarf mistletoe was observed. However, larch dwarf mistletoe was observed infecting mountain hemlock near Forest Roads 24 (T.6N., R.9E., S.6) and 6020 (T.6N., R.9E., S. 17 and 20).

Wind River Ranger District

Timber Inventory Plots

Plot 1031 - west of Indian Heaven Wilderness (T.6N, R.8E, S.8): Mountain hemlock and Pacific silver fir were present; no mountain hemlock dwarf mistletoe was observed.

Plot 1033 - west of Indian Heaven Wilderness (T.6N, R.7 1/2E, S.13): Mountain hemlock and Douglas-fir were present; no mountain hemlock dwarf mistletoe was observed. Nearby stands had heavy western hemlock dwarf mistletoe (Arceuthobium tsugense subsp. tsugense) on western hemlock and Pacific silver fir.

Plot 561 - west of Indian Heaven Wilderness (T.6N, R.7 1/2E, S.24): Plot had been clearcut prior to 1987. Adjacent stand had western hemlock and Pacific silver fir with no dwarf mistletoe.

Roadside Surveys

Forest Roads 30, 65, and 6501 on the west side of Indian Heaven Wilderness were surveyed. Mountain hemlock occurred at the higher elevations along these roads, but no dwarf mistletoe was observed on mountain hemlock.

Several populations of western hemlock dwarf mistletoe ocurred on western hemlock along Forest Roads 30 and 6501 (T.6N., R.7E., S.1, 2, and 11).

Packwood Ranger District

Timber Inventory Plots

Plot 922 - west of Goat Rocks Wilderness (T.11N, R.10E, S.4): Mountain hemlock, Douglas-fir, and true fir were present without dwarf mistletoe infection.

Roadside Surveys

We surveyed Forest Roads 21 (southeast of Packwood) and 52 (north of Packwood). Mountain hemlock occurred in high elevation stands near these roads, but no dwarf mistletoe was observed. Western hemlock dwarf mistletoe was common on western hemlock and Pacific silver fir along Forest Road 52, just south of Mt. Rainier National Park (T.14N., R.8E., S.5).

Randle Ranger District

Roadside Surveys

We surveyed Forest Roads 25, 99, 2516, 2518, and 28. On the east side of Mt. St. Helens National Volcanic Monument, on both sides of Forest Road 99, 3.4 miles west from the junction with Forest Road 25, we found a large mountain hemlock dwarf mistletoe infection center at 3800 ft elevation, near Wakepish Creek (T.10N, R.6E, S.26, sw quarter section). Many large, heavily infected mountain hemlock were growing next to large, uninfected western hemlock. In the understory, small mountain hemlock were infected while western hemlock were not infected. Many large and small mountain hemlock had large witches' brooms. Specimens were collected.

Western hemlock dwarf mistletoe was common along Forest Road 25, south of Forest Road 99 (T.10N., R.7E., S.30 and 31; and T.9N., R.7E., S.30).

Mt. Rainier National Park

Roadside Surveys

The highway between Longmire and Paradise on the south side of Mt. Rainier National Park was surveyed. This length of highway includes part of the upper Nisqually River valley where a very early collection (1896) was reported (Hawksworth and Wiens 1972, 1996). Our surveys in this area indicate that western hemlock dwarf mistletoe is common on western hemlock and Pacific silver fir around Longmire and east of Cougar Rock Campground. Although mountain hemlock is common east of Cougar Rock Campground, no dwarf mistletoe was observed. Therefore, the early report of dwarf mistletoe on mountain hemlock from Upper Nisqually Valley was probably from infection on western hemlock, or a case of crossover infection of western hemlock dwarf mistletoe on mountain hemlock. Although the report of dwarf mistletoe on mountain hemlock from Upper Nisqually Valley has not been

confirmed, mountain hemlock dwarf mistletoe may indeed occur in the vicinity. Further work is needed in Mt. Rainier National Park.

Mt. Baker-Snoqualmie National Forest (Surveyed in June and September, 1995)

Mount Baker Ranger District

Timber Inventory Plots

Plot 064 - northeast of Mt. Baker in the Anderson Creek drainage: only a few mountain hemlock were present, and none were infected with dwarf mistletoe. However, mountain hemlock were infected with dwarf mistletoe along the ridge to the west of Anderson Creek (T.39N., R.8E., S.11). Large witches' brooms on many large mountain hemlock were visible from Forest Road 3071. No specimens were collected from this population because it is only a few miles northwest of the extensive populations of mountain hemlock dwarf mistletoe near the Mt. Baker ski area, northeast of Mt. Baker (T.39N, R.9E, S.16, 17, 20, and 21). The population along the Mt. Baker Highway near the Ski Area was previously reported (Hawksworth and Wiens 1972, Hawksworth 1990, Hawksworth et al. 1992, Hawksworth and Wiens 1996).

Roadside Surveys

West of Baker Lake, south of Mt. Baker Wilderness, large populations of mountain hemlock dwarf mistletoe were observed along Forest Road 1230, north and east of Tuckaway Lake and Blue Lake, at 3300 ft elevation. This is one of the larger populations of mountain hemlock dwarf mistletoe located in Washington thus far (T.37N., R.8E., S. 28, 29, 32, and 33). Specimens were collected.

South of Mt. Baker, within Mt. Baker Wilderness, mountain hemlock dwarf mistletoe occurred north of Schreibers Meadow at 3600 ft elevation (T.37N, R.8E, S.7). Mountain hemlock dwarf mistletoe was common on mountain hemlock, occasional on Pacific silver fir, and rare on subalpine fir. Specimens were collected.

Another population of mountain hemlock dwarf mistletoe was found approximately 2.5 miles east of Schreibers Meadow, along Forest Road 1124, at 3700 ft elevation (T.37N, R.8E, S.2). This population was originally reported by Jan Henderson and David Shaw. Specimens were collected.

We did not find mountain hemlock dwarf mistletoe near Sauk Mountain, along Forest Road 1030, north of Rockport State Park (T.35N, R.9E, S.11 and 14).

We surveyed Forest Road 1610 in the vicinity of Suiattle Mountain (T.34N, R.10E, S.27 and 34), but did not observe any mountain hemlock dwarf mistletoe.

Darrington Ranger District

Roadside Surveys

We surveyed Forest Road 18 along Segelsen Ridge (T.33N, R.8E, S.13, 19, 24, 30), and did not find mountain hemlock dwarf mistletoe.

Along Forest Road 49 above Sloan Creek, mountain hemlock dwarf mistletoe occurred uphill from the road at an intermittent creek, across from the gravel pit between Sloan and Bowser Creeks; and past Bowser Creek (T.29N, R.12E, S.9, 15, 16). Mountain hemlock dwarf mistletoe was found on mountain hemlock and Pacific silver fir, in both the overstory and understory. Specimens were collected from the Sloan Creek population. Western hemlock dwarf mistletoe was also present on western hemlock and Pacific silver fir.

Along Forest Road 2550 east of Lime Creek, we did not find mountain hemlock dwarf mistletoe (T.32N, R.12E, S.29).

North Bend Ranger District

Timber Inventory Plots

Vicinity of Plot 252 - Approximately one half mile north of the public parking lot at Alpental Ski Area: one mile north of Snoqualmie Pass (T.23N, R.11E, S.29), a population of mountain hemlock dwarf mistletoe occurred on a steep slope at 3900 ft elevation. Specimens were collected.

Olympic National Forest (Surveyed October 1995)

Hood Canal Ranger District

Roadside Surveys

North of Three Peaks, along Forest Road 2270, mountain hemlock dwarf mistletoe was common and heavy on mountain hemlock, and occasional on Pacific silver fir in fragmented patches of very old trees at 3300 ft elevation (T.23N, R.7W, S.15,16). This population of mountain hemlock dwarf mistletoe was reported previously (Hawksworth and Wiens 1996).

In the Mt. Tebo area, along Forest Roads 200, 210, and 230 (T.23N, R.5W, S. 19,20,29; and T.23N, R.6W, S.23,24,25), few mountain hemlock were seen, although western hemlock was abundant with western hemlock dwarf mistletoe, especially in section 25.

Quinault Ranger District

Timber Inventory Plots

Vicinity of Plot 1094 - Near the headwaters of Matheny Creek (T.24N, R.9W, S.17): we found no mountain hemlock dwarf mistletoe, but western hemlock dwarf mistletoe had crossed over to a few mountain hemlock trees. This

parasite/host combination is uncommon and has only been reported from a few other localities (Shaw 1982; Hawksworth and Wiens 1972, 1996; Hawksworth et al., 1992; Mathiasen 1994).

Vicinity of Plot 1041 - Near Moonlight Dome (T. 23 N, R. 8W, S. 14, 24), no dwarf mistletoe was seen on the mountain hemlock.

Roadside Surveys

Along Forest Road 2170 on Matheny Ridge (T. 24N, R. 10W, S. 11,13,14; and T.24N, R.9W, S. 7,8,9), a small number of mountain hemlock were observed, but only western hemlock dwarf mistletoe was found on western hemlock.

Along Forest Road 2190 near Higley Peak (T. 23N., R. 10W, S. 1), no mountain hemlock were seen.

Soleduck Ranger District

Roadside Surveys

Along Forest Road 2918.100 in the Pine Mountain area (T. 29N, R. 10W, S.35,36) although mountain hemlock was abundant, no dwarf mistletoe was observed.

FUTURE SURVEY

The general regional survey will continue in 1997. Additional roadside surveys are needed in the mountain hemlock zone east of the Cascade Crest in Washington, in the vicinity of Mt. Rainier National Park, and on the Olympic National Forest. In October 1995, many areas on the Olympic National Forest were inaccessible due to washouts, landslides, and road closures. These road conditions are not expected to improve in the near future.

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